UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,843	01/16/2004	Sunil G. Warrier	02-508	6939

34704 7590 03/01/2007

BACHMAN & LAPOINTE, P.C.
900 CHAPEL STREET
SUITE 1201
NEW HAVEN, CT 06510

EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,843	WARRIER ET AL.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9-7-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6, 7, 10, 11, 21, 23-28, 30, 31, 34, 35, 45, and 47-52 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/13522. The reference is directed to a solid oxide fuel cell assembly comprising an interconnect assembly comprising a separator plate (122), a silver alloy mesh (136) contacting one side of the plate, and a nickel mesh (144) contacting the other side of the plate (see abstract; Fig. 4). The sides of the mesh contacting the separator are "first portions" and the sides of the mesh contacting the electrodes are "second portions." The meshes are "superstructures" which comprise wire substructures extending perpendicularly to each other. The superstructures would inherently be compliant. The silver in mesh 136 may be combined with another material to form a composite or may be formed on stainless steel (see abstract).

Thus, the instant claims are anticipated.

3. Claims 1-7, 10, 11, 19, 21, 25-31, 34, 35, 43, and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Singh (U.S. Patent 4,389,467). The reference is directed to a molten carbonate fuel cell assembly comprising an interconnect assembly comprising a separator plate (11), and current collectors (27, 29) contacting the separator plate. The current collectors are corrugated stainless steel wire meshes which form sinusoidal cross-sectional channels (see Fig. 1; col. 4, line 27-32). The areas of the mesh contacting the separator are "first portions" and the areas of the mesh contacting the electrodes (13, 15) are "second portions." The meshes are "superstructures" which comprise wire substructures. The superstructures would inherently be compliant. Although the fuel cell of the reference is a molten carbonate fuel cell, the instant claims do not positively recite a solid oxide fuel cell and are thus anticipated by the reference.

4. Claims 1-7, 11, 15-18, 21, 24-31, 35, 39-42, 45, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 19517443. The reference is directed to a molten carbonate fuel cell assembly comprising an interconnect assembly comprising a separator plate and current collectors contacting the separator plates (see translation, page 2). The current collectors are nickel-coated stainless steel wire meshes which form square, rectangular, or slanted cross-sectional channels (see Figs. 4a, 4b). The areas of the mesh contacting the separator are "first portions" and the areas of the mesh contacting the anode are "second portions." The meshes are "superstructures" which comprise wire substructures. The superstructures are compliant (see translation, page 3). Although the fuel cell of the reference is

a molten carbonate fuel cell, the instant claims do not positively recite a solid oxide fuel cell and are thus anticipated by the reference.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 8, 9, 12-14, 19, 20, 32, 33, 36-38, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19517443.

The reference is applied to claims 1-7, 11, 15-18, 21, 24-31, 35, 39-42, 45, and 48 for the reasons stated above. However, the reference does not expressly teach that the current collectors are dimpled (claims 8, 9, 32, and 33) or that they define sinusoidal or hourglass-shaped channels (claims 19, 20, 43, or 44), or that the compliance of the current collector is within the ranges defined by claims 12-14 and 36-38.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of DE '443 fairly suggests the claimed shapes and ranges of compliance. On page 3 of the translation, the reference teaches that "[v]ery different mechanical and electrical characteristics of the current collector can be achieved by the different shaping of the wire mesh, i.e. different contact areas and kiss pressures

both on the side to the electrode as well as on that the bipolar plate of the gas cell turned side." Accordingly, this disclosure would motivate the artisan to change the shape of the current collector to affect the mechanical and electrical characteristics. As such, the shapes recited in the instant claims are not considered to involve an inventive step over DE '443. Additionally, the ranges of compliance recited in claims 12-14 and 36-38 are also not considered to involve an inventive step since the reference suggests modifying the mechanical characteristics and kiss pressure of the current collector.

7. Claims 22 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19517443 in view of Minh (U.S. Patent 6,296,962).

DE 19517443 is applied to claims 1-7, 11, 15-18, 21, 24-31, 35, 39-42, 45, and 48 for the reasons stated above. However, the reference does not expressly teach that the current collectors are made of a chromium-based alloy.

Minh teaches a solid oxide fuel cell current collector that is made of a nickel-chromium or iron-chromium based material (see col. 4, line 16).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Minh would motivate the artisan to use these materials in the current collector of DE '443. In column 4, line 14, Minh teaches that these materials are "preferably" used and that they are oxidation-resistant. As such, the artisan would be motivated to use these materials in the current collector of DE '443.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JC

Jonathan Crepeau
Primary Examiner
Art Unit 1745
February 27, 2007